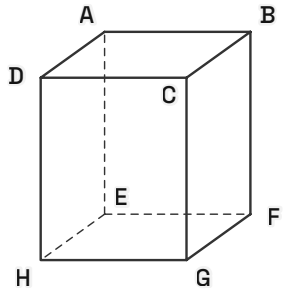
Unit 17 · Solid Objects

HARDER PRACTICE QUESTIONS

Full marks 27

Write your answers on separate paper. Give a reason for each answer. The boxes and sizes on this sheet are made up.

1 Edges of a cuboid [4]



Look at the cuboid ABCDEFGH. Its top is ABCD and its bottom is EFGH.

i. Name the three edges parallel to AB.
ii. Name the three edges that meet at G.
iii. Name the three faces that meet at C.
iv. Which four edges never meet AB, and are not parallel to it either?

2 A box with six sides at each end [4]

A pencil box is shaped like a pencil: each end is a flat face with six sides, and six rectangles go round it. Use the idea of Back to the chalk box: each corner of the bottom face gives 2 vertices, 3 edges and 1 side face.

i. Find its number of vertices, V.
ii. Find its number of edges, E.
iii. Find its number of faces, F.
iv. Work out $V - E + F$.

3 The painted cube [4]

A wooden cube with edges 3 cm long is painted red all over. Then it is cut into small cubes with edges 1 cm long.

i. How many small cubes are there?
ii. How many small cubes have paint on 3 faces? Where are they?
iii. How many have paint on exactly 2 faces, and how many on exactly 1 face? Where are they?
iv. How many have no paint at all? Check that your answers add up to i.

4 Wire skeletons [4]

Nishma makes skeleton models from wire.

i. How much wire does a cuboid 10 cm long, 6 cm broad and 5 cm high need?
ii. She uses the same length of wire for a cube. How long is each edge?
iii. With 48 cm of wire, make your own cuboid whose length, breadth and height are three different whole numbers of centimeters. Give its measures.

5 Wrapping a brick [3]

A brick is 20 cm long, 10 cm broad and 5 cm high.

i. Write the length and breadth of each of its six faces.
ii. Find the area of each kind of face.
iii. How much paper covers the whole brick, with no overlap?

6 Which solid am I? [4]

Name each solid, and give a reason.

i. I have one flat face and one curved surface. Laid on my side, I roll round in a circle.
ii. I have two flat faces, both circles, and I roll in a straight line.
iii. I have no flat face, no edge and no vertex.
iv. I have 6 faces and 12 edges, and all my edges are the same length.

7 Think: four faces alike [4]

A cuboid has two square faces, at its two ends, and four faces that are all the same rectangle.

i. Its 12 edges come in how many different lengths? How many edges of each?
ii. Its square ends have sides 4 cm. Its length is 4 cm too. What is it now?
iii. Another cuboid's six faces come in three different sizes, two of each. How many different lengths do its edges have, and how many edges of each?
iv. Can a cuboid have exactly five faces the same size? Why or why not?